

WITH THE COMPASSION OF

(S). J. Calman

From the "Proceedings of the Royal Society," 1932.

D. M. S. Macdonald

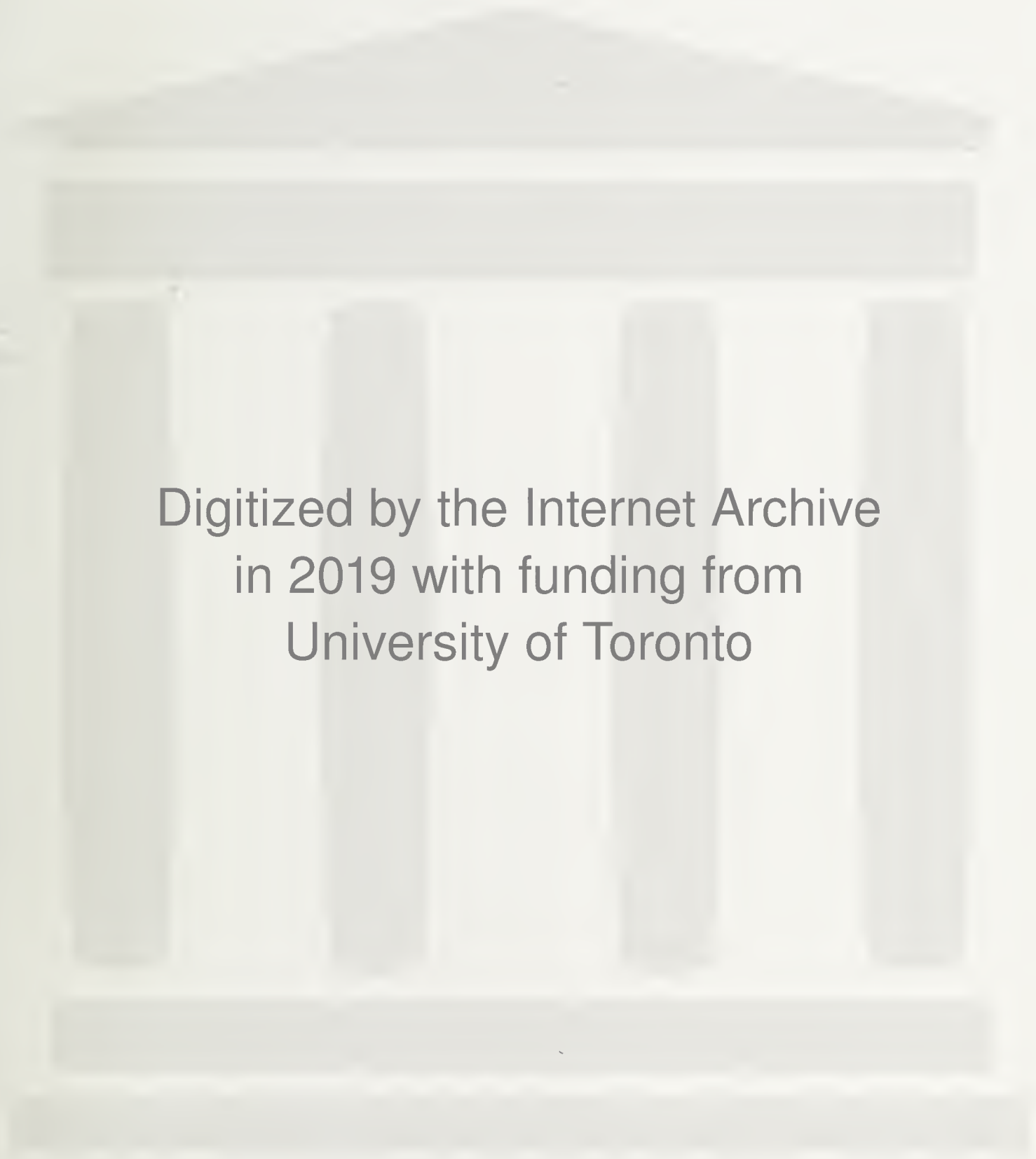
OBITUARY NOTICE

OF

WILLIAM CARMICHAEL M^CINTOSH.

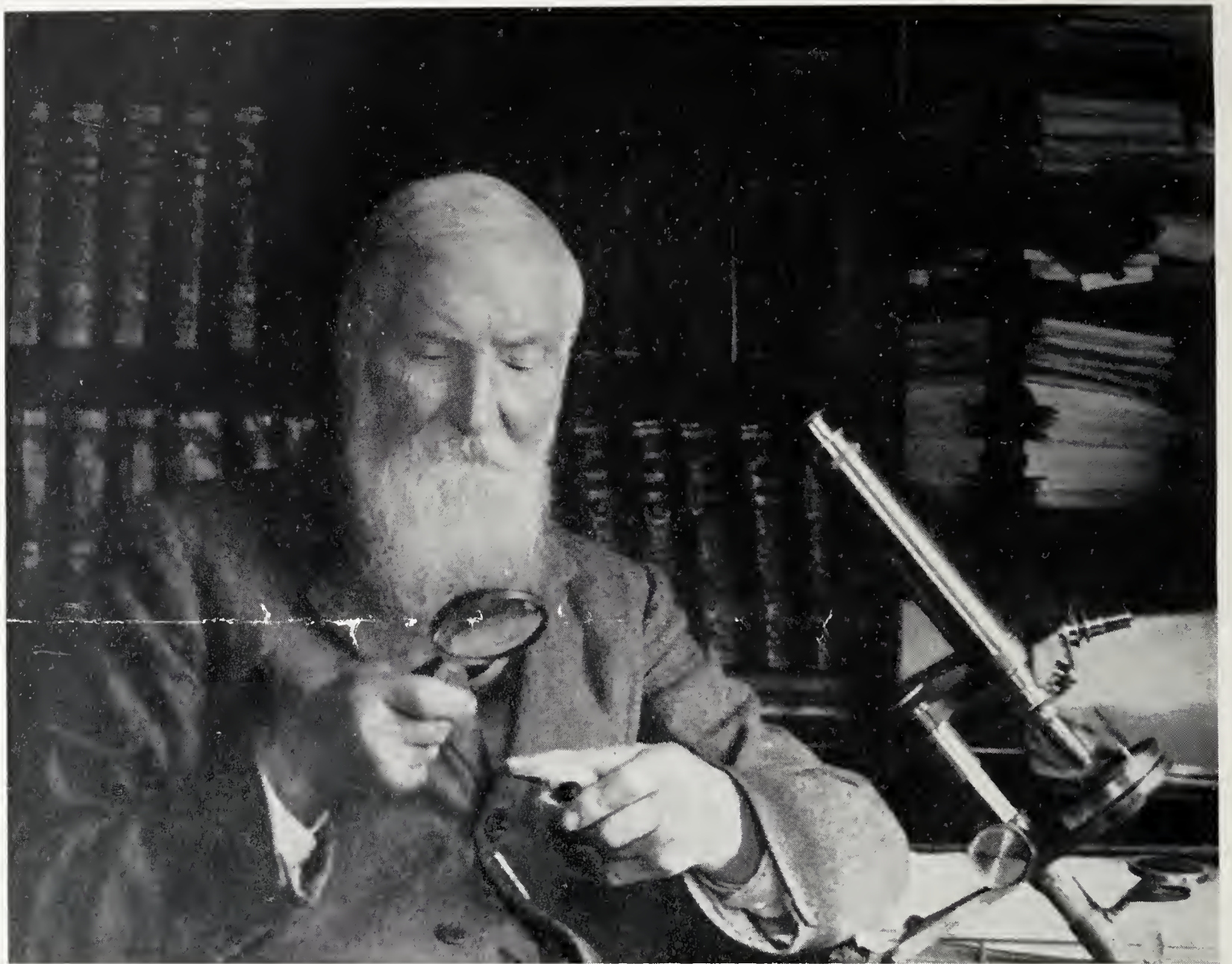
(WITH PORTRAIT.)

1838-1931.



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W. L. G. F. G. G.

WILLIAM CARMICHAEL M'INTOSH—1838–1931.

At the time of his death Professor M'INTOSH was one of the senior fellows of the Royal Society, having been elected so long ago as 1877, and he had out-lived nearly all the associates of his prime. To the younger zoologists of the present day, perhaps, "the man was no more than a voice, In the white winter of his age, to those With whom he dwelt, new faces, other minds," yet to any who cared for the historical development of their science it was something memorable to talk to a man who had known Edward Forbes and sat at the feet of John Goodsir, and who, having met *Monro tertius*, lived to discuss the Polychæta with *Monro's* great grandson.

William Carmichael M'Intosh was born in St. Andrews on October 10, 1838. His father, Baillie John M'Intosh, was a builder and contractor in St. Andrews and, as town councillor and magistrate, was prominent for many years in the civic life of that ancient city. It was probably his mother who awakened the boy's interest in the living things of the sea, for, as he tells us, it was she who, with his sisters, long afterwards kept him supplied with material for his researches when he was living inland at Murthly. One of the sisters, Roberta, afterwards the wife of Dr. Albert Günther, was an accomplished artist, and her exquisite coloured drawings adorn many of her brother's works. It must have been in his boyhood also that he met Edward Forbes and accompanied him on seashore excursions at St. Andrews.

After his school-days at Madras College, M'Intosh entered the University of St. Andrews (1853–1857) and later proceeded to Edinburgh where he studied medicine, taking the diplomas of medicine and surgery and receiving the degree of M.D. in 1860. On graduating, he was appointed Assistant Physician to Murray's Royal Asylum, Perth, and specialised in the study of mental disease, on which subject he published a number of papers. In 1863 he became Medical Superintendent of Perth District Asylum at Murthly, a position which he held until 1882. In later life, when occupied with widely different work, he retained his interest in his old profession, and in 1900, as president of the

Fifeshire Medical Association, he gave an address on the surgical cases that had come under his notice in the twenty years of asylum practice at Murthly.

Through all these years, however, the interests of his boyhood continued to claim an increasing share of his attention. At Edinburgh, where he studied anatomy under John Goodsir, he had published a paper on the arrangement of the muscle-fibres in the bird's heart. His thesis for the degree of M.D., for which he received a gold medal, was entitled "Observations and Experiments on *Carcinus manas*" and dealt mainly with the physiology of the nervous system in the shore-crab and its reactions to various drugs. It seems to have been the influence of another of his teachers, G. J. Allman, that turned his attention decisively to marine zoology. He accompanied Allman on dredging excursions in the Firth of Forth and learned from him the use of the dredge and the tow-net. He began early the long series of faunistic papers which were continued down to the last years of his life. Much of his material, as already mentioned, came from St. Andrews, but he also made excursions as far afield as the Channel Islands, the Shetlands, and the Outer Hebrides to study the marine animals. A series of papers on the St. Andrews fauna was afterwards reprinted in a volume, "The Marine Invertebrates and Fishes of St. Andrews," published in 1875.

The groups to which M'Intosh's attention was specially given were the Nemertine and Polychæte Worms. A series of papers on these led up to his great "Monograph of the British Marine Annelids," published by the Ray Society, of which the first two parts, dealing with the Nemertinea, appeared in 1873 and 1874.

M'Intosh's work on the Nemertinea was the most important of his contributions to pure zoology. The worms of this group are in some ways peculiarly difficult to study. Many of them are too large for microscopic examination of the entire animals to reveal much of their internal structure. Their pulpy consistency and the fact that all the organs are embedded in a continuous parenchyma make dissection almost impossible, and the technique of section-cutting was at that time in its infancy. Nevertheless, M'Intosh succeeded, by methods that now seem primitive, in making out the main features of their anatomy. Later investigators, working with microtome and embedding-bath, have added many details but have found surprisingly little to correct. M'Intosh failed to discover the fine canals that form the excretory system, but, on the other hand, he was the first to make clear the relations of the characteristic and complicated proboscis and its sheath. Dr. Otto Bürger in his monograph of the Naples Nemertinea (1895) pays cordial tribute to "Die glänzende Monographie der Britischen Nemertinen von M'Intosh, die in faunistischer und systematischer Hinsicht Unschätzbare geleistet hat."

After the publication of the first two parts the Annelid monograph was laid aside and it was not until 1900 that a beginning was made with the Polychæta

Thereafter, the successive parts appeared at intervals of some years until in 1923 the present writer had the unusual experience of seeing through the press the final sheets of a work that had begun publication when he was in his cradle, half a century before. The monograph is illustrated by numerous exquisitely executed plates, many of them in colour, largely from drawings by Mrs. Günther. Although the work will always remain one of the classics of the subject, it inevitably suffered from the long period occupied in its publication. M'Intosh spared no pains in keeping abreast of the most recent literature, but it was not to be expected that a work planned in 1873 should reflect adequately the point of view of 1923.

Another important work on the Polychæta was the report on the collection obtained by the "Challenger" Expedition, which appeared in two large quarto volumes in 1885. Its preparation occupied M'Intosh for seven years. Among many other novelties described in it was the remarkable *Syllis ramosa*, which still remains the only known instance of lateral budding in a normal Polychæte.

While engaged on this collection, M'Intosh received from the "Challenger" office specimens of various problematical organisms which had been rejected by other specialists as not belonging to the groups they were studying. Among these was perhaps the greatest zoological novelty obtained by the expedition, the animal to which he gave the name *Cephalodiscus*. He gave a careful and detailed description of this and correctly recognised its affinity with Allman's *Rhabdopleura*. It was Harmer, however, who in a short but pregnant appendix to M'Intosh's report, pointed out the relationship of *Cephalodiscus* to *Balanoglossus* and the Chordata.

Meanwhile events had occurred that diverted M'Intosh's activities into new channels. In 1882 three of the chairs of Natural History in the Scottish Universities received new occupants. Sir Wyville Thomson died and was succeeded at Edinburgh by Cossar Ewart, then professor at Aberdeen. The Aberdeen chair was filled by the translation of Alleyne Nicholson from St. Andrews, and M'Intosh returned to his native city as Professor of Natural History. In his inaugural address, after giving a sketch of the advances in marine zoology and particularly of the deep-sea explorations of the preceding decade, he strongly urged the establishment of a marine laboratory at St. Andrews. Although the plans which he drew up for this could not be realized at the time, an opportunity came a few years later.

In 1883 a Royal Commission was appointed under the chairmanship of Lord Dalhousie, with Huxley as scientific member, to inquire into the problems raised by the introduction of beam-trawling and its effect upon the sea-fisheries of Scotland. M'Intosh, who had published several papers on the life-history of the salmon while he was at Murthly, was appointed to conduct scientific investigations for the Commission. He threw himself into the task with his wonted

energy and enthusiasm, and, although he was by no means immune to the discomforts of work at sea, carried out a number of experimental cruises on board a commercial trawler and produced a report within a year. Perceiving the need for laboratory work on shore, he succeeded, with the aid of a small grant from the Commission, in establishing at St. Andrews the first marine laboratory in Great Britain. This was opened in 1884 in a small wooden building which had been hastily erected a few years before for use as a fever hospital. The building was barely weather-tight, the only boat was a small yawl, and the staff consisted of a single fisherman, known to generations of students as "Professor" Brown. It is not too much to say that for the next ten years at least this modest establishment was the headquarters of British marine research. Besides M'Intosh and his pupils the list of zoologists who worked there includes the names of Ray Lankester, A. G. Bourne, Hubrecht, Nansen, Burdon Sanderson, Gotch, and many others of like distinction. When, in 1896, the wooden laboratory was replaced by the stone building provided by the generosity of Dr. C. H. Gatty, the example of St. Andrews had been followed elsewhere and the necessary support became increasingly hard to obtain. Since the war, the Gatty Laboratory has stood shuttered and deserted.

It was in 1865 that the late Professor G. O. Sars, in Norway, laid the foundation of scientific fishery research in a little paper in which he traced the life-history of the cod and showed that its eggs float at the surface of the sea. His work was followed up to some extent, especially in America, but it was M'Intosh and his pupils who first showed that all our marine food-fishes, with the notable exception of the Herring, have pelagic floating eggs, and by their detailed descriptions of the eggs and larval stages made possible the modern developments of marine fishery research. M'Intosh's work in this field was summarized in a book "Life Histories of British Marine Food-Fishes" which he wrote together with Dr. A. T. Masterman and published in 1897. His views on more general fishery questions were set forth in another work "The Resources of the Sea," published in 1898, and in a second edition in 1921. This book deals with many questions that are still matters of controversy, but its main conclusion will meet with a considerable measure of assent—"It is true that the larger examples of the common species of food-fishes become fewer by persistent fishing, but it cannot be said that, in the case of either round or flat fishes in the majority of the areas, signs of extinction are apparent."

As a zoologist, M'Intosh's interests were those of the field naturalist, and it was perhaps unfortunate that the main part of his working life fell in a period when zoologists tended to be interested only in the problems of morphology and embryology. It is evident from his writings, and it was still more evident to those who came in contact with him, that he had a clearer conception of the broad outlines of marine ecology than many of his contemporaries. The late

Dr. Nelson Annandale once told the present writer that his first realization of what ecology meant came from a seaside walk with M'Intosh.

No good highlander really dislikes a fight, and at the council table or in public controversy M'Intosh was accustomed to maintain his point of view with a tenacity which his opponents were apt to describe as obstinacy. In academic politics he played a conspicuous part, as, for instance, in the embittered disputes that delayed the incorporation of University College, Dundee, in the University of St. Andrews.

Many academic and other honours came to M'Intosh in the course of his long life. He was a recipient of the Royal Medal in 1899, and in 1924 he was awarded the Linnean medal by the Linnean Society. It can be mentioned now that the first suggestion of his name for the latter honour came from his life-long friend Sir Ray Lankester. Of the many scientific societies of which he was a member, none claimed more of his interest in his later years than the Ray Society, which he had joined so long ago as 1863. He became its president in 1913 and thenceforward took a very active part in the management of its affairs. In spite of his remoteness from London he rarely missed a council meeting, and it was in returning from such a meeting in March that a bitter east wind and the inconsiderateness of some fellow-passengers led to a chill that even his iron constitution failed to shake off. The first of April saw the close of a career that was pursued to the very end with single-minded devotion and an industry that seemed as if it could never flag.

The portrait is reproduced from a photograph kindly lent by M'Intosh's nephew, Dr. R. T. Günther. It was taken in August, 1928, by Miss Alice Mitchell.

W. T. C.

